

**REMARKS**

**A. Objections to Claims**

In the Office Action mailed on March 29, 2006, claims 4, 6, 13, 14, 19, 21, 32 and 36 were objected to for several informalities. Claim 13 was objected to for using the phrase “scanning scale” instead of “scale grating.” In view of the present amendment of claim 13 that replaces “scanning scale” with “scale grating,” the objection has been overcome and should be withdrawn.

Claims 4, 6, 14, 19, 21, 32 and 36 were objected to for not having proper antecedent basis for “the + 1<sup>st</sup> order of diffraction” and “the – 1<sup>st</sup> order of diffraction.” Claims 4, 6, 14, 19, 21, 32 and 36 have been amended to provide proper antecedent basis for the terms. Accordingly, the objection has been overcome and should be withdrawn.

Since the above-mentioned amendment to claim 13 corrects an obvious and inadvertent error, the amendment is not related to patentability as defined in *Festo Corporation v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 234 F.3d 558, 56 USPQ2d 1865 (Fed. Cir. 2000) (*en banc*), *overruled in part*, 535 U.S. 722 (2002).

**B. 35 U.S.C. § 103**

**1. Michel et al., Takamiya et al. and Brake**

**a. Claims 1-4 and 6**

Claims 1-4 and 6 were rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al. and Brake. Applicants traverse this rejection for the same reasons given in their Amendment filed on November 3, 2005, the entire contents of which are incorporated herein by reference. Despite the impropriety of the rejection, claim 1 has been

canceled and claims 2-4 and 6 have been amended so as to depend from claim 34 and so the rejections have been rendered moot.

Note that the amendments made to claims 2-4 and 6 are solely being made to provide additional coverage for the interferential position measuring arrangement of claim 34 and so the amendments are not related to patentability as defined in *Festo Corporation v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd*, 234 F.3d 558, 56 USPQ2d 1865 (Fed. Cir. 2000) (*en banc*), *overruled in part*, 535 U.S. 722 (2002) (hereinafter *Festo I*).

**b. Claims 16-19, 21, 29 and 30**

Claims 16-19, 21, 29 and 30 were rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al. and Brake. Applicants traverse this rejection for the same reasons given in their Amendment filed on November 3, 2005, the entire contents of which are incorporated herein by reference. Despite the improperness of the rejection, claim 16 has been canceled and claims 17-19, 21 and 30 have been amended so as to depend from claim 37 and so the rejections have been rendered moot.

Note that the amendments made to claims 17-19, 21 and 30 are solely being made to provide additional coverage for the interferential position measuring arrangement of claim 37 and so the amendments are not related to patentability as defined in *Festo I*.

**2. Michel et al., Takamiya et al., Brake and Michel et al. ('457)**

**a. Claims 5 and 7**

Claims 5 and 7 were rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake and Michel et al. ('457). Applicants traverse this rejection for the

same reasons given in their Amendment filed on November 3, 2005, the entire contents of which are incorporated herein by reference. Despite the improperness of the rejection, the claims now depend from claim 34 and so the rejections have been rendered moot.

**b. Claims 20 and 22**

Claims 20 and 22 were rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake and Michel et al. ('457). Applicants traverse this rejection for the same reasons given in their Amendment filed on November 3, 2005, the entire contents of which are incorporated herein by reference. Despite the improperness of the rejection, the claims now depend from claim 37 and so the rejections have been rendered moot.

**3. Michel et al., Takamiya et al., Brake and Huber ('128)**

**a. Claim 8**

Claim 8 was rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake and Huber ('128). Applicants traverse this rejection for the same reasons given in their Amendment filed on November 3, 2005, the entire contents of which are incorporated herein by reference. Despite the improperness of the rejection, claim 8 has been canceled and so the rejection has been rendered moot.

**b. Claim 23**

Claim 23 was rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake and Huber ('128). Applicants traverse this rejection for the same reasons given in their Amendment filed on November 3, 2005, the entire contents of which are

incorporated herein by reference. Despite the impropriety of the rejection, claim 23 has been canceled and so the rejection has been rendered moot.

4. **Michel et al., Takamiya et al., Brake, Huber ('128) and Meyer et al.**

a. **Claims 9 and 34**

Claims 9 and 34 were rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake, Huber ('128) and Meyer et al. Applicants traverse this rejection for several reasons. First, claim 9 has been canceled rendering its rejection moot. Regarding claim 34, it has been amended so as to be in independent form. Claim 34 recites an interferential position measuring arrangement wherein the beam of rays emitted by the light source are received by a scale grating prior to reaching a scanning grating. The Office Action has relied on Michel et al.'s measuring instrument 0 shown in Fig. 1 to reject the claims. However, measuring instrument 0 has the light 1 reaching a scanning plate prior to reaching a scale grating 4 which is an order that is opposite to that recited in claim 34. Since Takamiya et al., Brake, Huber ('128) and Meyer et al. do not suggest altering Michel et al. so that light 1 reaches a scale grating prior to reaching a scanning grating, the rejection is improper and should be withdrawn.

It is noted that page 14 of the Office Action appears to be arguing that Michel et al.'s gratings have the same structure as the embodiments of gratings disclosed in Applicants' Application and so there is anticipation despite the different names given for the gratings. This is a short sighted and improper analysis. First, the analysis fails to take into account the claimed invention as a whole. Claim 34 regards an inferential position measurement arrangement that specifies the positioning of the scale grating, two scanning gratings, detection arrangement and

optoelectronic detector elements with respect to partial beams of rays that are formed from the scale grating, for example. In other words, the claimed invention must be considered as whole. *Schenck, A.G. v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983). In contrast, the Office Action has assumed that by finding bits and pieces of the claimed invention it necessarily has rendered the whole invention invalid. That is an incorrect assumption.

In addition, to the extent that the Office Action is asserting that the claimed scale and scanning gratings are phase gratings since such gratings are disclosed in Applicants' Specification. This assertion is also incorrect. Claim 34 does not limit the gratings to be phase gratings and it is improper to read such a limitation from Applicants' Specification into the claim. *Specialty Composites v. Cabot Corp.*, 845 F.2d 981, 6 USPQ2d 1601 (Fed. Cir. 1988).

The Office Action also appears to be asserting that Applicants are merely relying on the naming of the gratings for patentability. That is not so. One of ordinary skill would clearly understand that a scanning grating has different functions than a scale grating. For example, one of ordinary skill would understand that a scanning grating would be the grating of the scanner that is connected to a first object wherein the scanning grating does not move relative to the scanner. A scale grating would be connected to a second object to be measured relative to the first object and would move relative to the scanning grating so as to produce a modulated light pattern that can be used to produce a measurement. The invention of claim 34 sets forth this relationship/functionality. It is noted that Michel et al. defines items 3, 3' as scanning plates with a grating and item 4 as a scale grating. With the above described understanding of scale grating and scanning grating in mind, one of ordinary skill would readily identify that Michel et

al.'s items 3, 3' were arranged stationary in a scanning device while item 4 moved relative to items 3, 3' and the scanning device. That arrangement is different than the arrangement/functionality recited in claim 34. Furthermore, there is no suggestion in the art to alter the arrangement of Michel et al.'s items 3, 3' and 4 so that light encounters a scale grating prior to a scanning grating. For example, Mayer et al. discloses in the FIG. 2 embodiment (the embodiment relied on in the rejection) that the scanning plate 8 receives light from light source 6 prior to the light reaching the disk 2. Mayer et al.'s arrangement does not suggest the arrangement claimed. Without suggestion to alter the arrangement of Michel et al.'s items 3, 3' and 4, the rejection of claim 34 is improper and should be withdrawn.

The rejection of claim 34 is improper for the additional reason that neither Michel et al., Takamiya et al., Brake, Huber nor Meyer et al. disclose or suggest having Michel et al. use a scanning plate with opaque areas that generate the particular diffraction orders recited in the claims. The Office Action has asserted that the claim has "only added the specific  $\pm 1^{\text{st}}$  orders" and so it must be obvious. Again, the Office Action has ignored the whole invention. Claim 34 recites that the scanning plate is opaque in such a manner that "only partial beams according to a  $+1^{\text{st}}$  order of diffraction and a  $-1^{\text{st}}$  order of diffraction from said scale grating contribute to generation of said scanning signals." Since there is no suggestion for Michel et al. to produce only  $\pm 1^{\text{st}}$  orders in the manner claimed, the rejection is improper.

The rejection also makes the statement at page 8 that "the motivation used in claims 9 and 24 state that 'selected' diffraction orders are received or generated, which would include the  $\pm 1^{\text{st}}$  orders of diffraction." Applicants do not understand the statement. The motivation for

altering Michel et al. to reject claim 34 must come from the prior art and not the above mentioned cryptic statement.

Note that claim 34 has been amended so as to be in independent form and contains the subject matter of independent claim 1. To the extent that claim 34 has been amended so as to contain subject matter that was inherently present in the original claim 34, the amendments are not related to patentability. *See, Festo Corporation v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd*, 535 U.S. 722 (2002) (hereinafter *Festo II*).

**b. Claims 24 and 37**

Claims 24 and 37 were rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake, Huber ('128) and Meyer et al. Applicants traverse this rejection for several reasons. First, claim 24 has been canceled rendering its rejection moot. Regarding claim 37, it has been amended so as to be in independent form. Claim 37 recites an interferential position measuring arrangement wherein the beam of rays emitted by the light source are received by a scale grating prior to reaching a scanning grating. As mentioned above in Section B.4.a., Michel et al. discloses has its light 1 proceeding in an order that is opposite to that recited in claim 37. Since Takamiya et al., Brake, Huber ('128) and Meyer et al. do not suggest altering Michel et al. so that light 1 reaches a scale grating prior to reaching a scanning grating, the rejection is improper and should be withdrawn.

Claim 37 is patentable for the additional reason that neither Michel et al., Takamiya et al. nor Brake disclose or suggest having Michel et al. use a scanning plate with opaque areas arranged "so that only partial beams according to a +1<sup>st</sup> order of diffraction and a -1<sup>st</sup> order of

diffraction from said scale grating contribute to generation of said scanning signals.” The above clause is present in claim 34 and so the arguments above in Section B.4.a with respect to claim 34 apply to claim 37 as well.

Note that claim 37 has been amended so as to be in independent form and contains the subject matter of independent claim 16. To the extent that claim 37 has been amended so as to contain subject matter that was inherently present in the original claim 37, the amendments are not related to patentability. *See, Festo II*.

**5. Michel et al., Takamiya et al., Brake and Holzapfel**

**a. Claims 10-12**

Claims 10-12 were rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake and Holzapfel. Applicants traverse this rejection in that claims 10-12 depend directly or indirectly on claim 1. Since Takamiya et al., Brake and Holzapfel do not suggest altering Michel et al. so that light 1 reaches a scale grating prior to reaching a scanning grating, the rejection is improper and should be withdrawn. Despite the impropriety of the rejection, claims 10 and 11 have been amended so as to depend from claim 34 and so the rejection has been rendered moot.

Note that the amendments made to claims 10 and 11 are solely being made to provide additional coverage for the interferential position measuring arrangement of claim 34 and so the amendments are not related to patentability as defined in *Festo I*.



**b. Claim 25-27**

Claims 25-27 were rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake and Holzapfel. Applicants traverse this rejection in that claims 25-27 depend directly or indirectly on claim 16. Since Takamiya et al., Brake and Holzapfel do not suggest altering Michel et al. so that light 1 reaches a scale grating prior to reaching a scanning grating, the rejection is improper and should be withdrawn. Despite the impropriety of the rejection, claims 25 and 27 have been amended so as to depend from claim 37 and so the rejection has been rendered moot.

Note that the amendments made to claims 25 and 27 are solely being made to provide additional coverage for the interferential position measuring arrangement of claim 37 and so the amendments are not related to patentability as defined in *Festo I*.

**6. Michel et al., Takamiya et al., Brake and Cited Art**

**a. Claim 13**

Claim 13 was rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake and Applicants' cited art. Applicants traverse this rejection for the same reasons given in their Amendment filed on November 3, 2005, the entire contents of which are incorporated herein by reference. Despite the impropriety of the rejection, claim 13 has been amended so as to depend from claim 34 and so the rejection has been rendered moot.

Note that the amendment made to claim 13 is solely being made to provide additional coverage for the interferential position measuring arrangement of claim 34 and so the

amendments are not related to patentability as defined in *Festo I*.

**b. Claim 28**

Claim 28 was rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake and Applicants' cited art. Applicants traverse this rejection for the same reasons given in their Amendment filed on November 3, 2005, the entire contents of which are incorporated herein by reference. Despite the improperness of the rejection, claim 28 has been amended so as to depend from claim 37 and so the rejection has been rendered moot.

Note that the amendment made to claim 28 is solely being made to provide additional coverage for the interferential position measuring arrangement of claim 37 and so the amendments are not related to patentability as defined in *Festo I*.

**c. Claims 35 and 38**

Claims 35 and 38 were rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake and Applicants' cited art. Applicants traverse the rejection. Claims 35 and 38 depend directly on claims 13 and 28, respectively, and so the rejections are improper for the reasons set forth above in Sections B.6.a and b with respect to claims 13 and 38. The rejection is improper for the additional reason neither Michel et al., Takamiya et al., Brake nor Applicants' cited art disclose or suggest having Michel et al. generate the recited beam and the beam waist with the properties recited in the claims. The motivation to combine provided at pages 10 and 11 of the Office Action is not based on any teaching in the references but are clearly based on improper hindsight and Applicants' own Specification.

Despite the improperness of the rejections, claims 35 and 38 now depend indirectly on

claims 34 and 37, respectively, and so the rejections have been rendered moot.

7. **Michel et al., Takamiya et al., Brake and Huber ('546)**

a. **Claim 14**

Claim 14 was rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake and Huber ('546). Applicants traverse this rejection for the same reasons given in their Amendment filed on November 3, 2005, the entire contents of which are incorporated herein by reference. Despite the improperness of the rejection, claim 14 has been amended so as to depend from claim 34 and so the rejection has been rendered moot.

Note that the amendment made to claim 14 is solely being made to provide additional coverage for the interferential position measuring arrangement of claim 34 and so the amendments are not related to patentability as defined in *Festo I*.

b. **Claims 32 and 36**

Claims 32 and 36 were rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake and Huber ('546). Applicants traverse the rejection. Claims 35 and 38 depend directly on claims 1 and 16, respectively, and so the rejections are improper for the reasons set forth in Applicants' Amendment filed on November 3, 2005 with respect to claims 1 and 16, the entire contents of which are incorporated herein by reference. The rejection is improper for the additional reason neither Michel et al., Takamiya et al., Brake nor Huber ('546) disclose or suggest having Michel et al. generate the particular diffraction orders for the recited six partial beams. The motivation to combine provided at page 12 of the

Office Action is not based on any teaching in the references but are clearly based on improper hindsight and Applicants' own Specification. Despite the impropriety of the rejections, claims 32 and 36 have been amended so as to depend from claims 34 and 37, respectively, and so the rejections have been rendered moot.

Note that the amendment made to claims 32 and 36 are solely being made to provide additional coverage for the interferential position measuring arrangements of claims 34 and 37, respectively, and so the amendments are not related to patentability as defined in *Festo I*.

c. **Claim 33**

Claim 33 was rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake and Huber ('546). Applicants traverse the rejection. Claim 33 depends indirectly on claim 1 and so the rejection is improper for the reasons set forth in Applicants' Amendment filed on November 3, 2005 with respect to claim 1, the entire contents of which are incorporated herein by reference. The rejection is improper for the additional reason neither Michel et al., Takamiya et al., Brake nor Huber ('546) disclose or suggest having Michel et al. use a detection arrangement with a phase grating that splits light in the diffraction orders recited in the claim. The motivation to combine provided at page 12 of the Office Action is not based on any teaching in the references but are clearly based on improper hindsight and Applicants' own Specification. Despite the impropriety of the rejection, claim 33 now depends indirectly from claim 34 and so the rejection has been rendered moot.

8. **Michel et al., Takamiya et al., Brake, Huber ('546), Michel ('457)**

Claim 15 was rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake, Huber ('546) and Michel et al. ('457). Applicants traverse this rejection for the same reasons given in their Amendment filed on November 3, 2005, the entire contents of which are incorporated herein by reference. Despite the impropriety of the rejection, claim 15 now depends indirectly on claim 34 and so the rejection has been rendered moot.

9. **Michel et al., Takamiya et al., Brake and Hercher**

Claim 31 was rejected under 35 U.S.C. § 103 as being obvious in view of Michel et al., Takamiya et al., Brake and Hercher. Applicants traverse this rejection for the same reasons given in their Amendment filed on November 3, 2005, the entire contents of which are incorporated herein by reference. Despite the impropriety of the rejection, claim 31 has been amended so as to depend from claim 37 and so the rejection has been rendered moot.

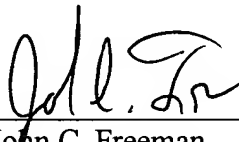
Note that the amendment made to claim 31 is solely being made to provide additional coverage for the interferential position measuring arrangement of claim 37 and so the amendments are not related to patentability as defined in *Festo I*.

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Amendment dated July 7, 2006  
Response to Final Office Action of March 29, 2006

**CONCLUSION**

In view of the arguments above, Applicants respectfully submit that all of the pending claims 2-7, 10-15, 17-22 and 25-38 are in condition for allowance and seeks an early allowance thereof. If for any reason, the Examiner is unable to allow the application in the next Office Action and believes that an interview would be helpful to resolve any remaining issues, she is respectfully requested to contact the undersigned attorneys at (312) 321-4200.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "John C. Freeman", is written over a horizontal line.

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